

What is claimed is:

1. A display device comprising:

a back panel which includes a plurality of cathode lines,
a plurality of electron sources which are arranged on the
5 plurality of respective cathode lines, control electrodes which
are arranged to face the cathode lines in an opposed manner and
controls an emission quantity of electrons from the electron
sources and a back substrate which holds the cathode lines; and
a face panel which includes an anode and fluorescent
10 materials, wherein

the control electrode includes a plurality of small
apertures which allow electrons emitted from the electron sources
to pass therethrough to the face panel side at regions which
respectively face the each electron source, and each respective
15 electron source is divided into a plurality of small electron
sources corresponding to the plurality of respective small
apertures, and the small electron sources contain boron.

2. A display device according to claim 1, wherein the boron
is arranged on control-electrode-side surfaces of the small
20 electron sources.

3. A display device according to claim 1, wherein the boron
is arranged on cathode-line-side surfaces of the small electron
sources.

4. A display device according to claim 1, wherein the boron
25 is arranged on surfaces of the cathode lines with respect to

the plurality of small electron sources in common.

5. A display device according to claim 1, wherein an area of the small electron source is set smaller than an area of the small aperture which corresponds to the small electron source.

5 6. A display device comprising:

a back panel which includes a plurality of cathode lines, a plurality of electron sources which are arranged on the plurality of respective cathode lines, control electrodes which are arranged to face the cathode lines in an opposed manner and 10 controls an emission quantity of electrons from the electron sources and a back substrate which holds the cathode lines; and

a face panel which includes an anode and fluorescent materials, wherein

the control electrode includes a plurality of small 15 apertures which allow electrons emitted from the electron sources to pass therethrough to the face panel side at regions which respectively face the each electron source, and

each respective electron source is divided into a plurality of small electron sources corresponding to the plurality of 20 respective small apertures, and the small electron sources and the control electrodes contain boron.

7. A display device according to claim 6, wherein the control electrodes are made of a metal material.

8. A display device comprising:

25 a back panel which includes a plurality of cathode lines,

a plurality of electron sources which are arranged on the plurality of respective cathode lines, control electrodes which are arranged to face the cathode lines in an opposed manner and controls an emission quantity of electrons from the electron 5 sources and a back substrate which holds the cathode lines; and

a face panel which includes an anode and fluorescent materials, wherein

the control electrode includes a plurality of small apertures which allow electrons emitted from the electron sources 10 to pass therethrough to the face panel side at regions which respectively face the each electron source and projecting portions which extend to the back substrate side at portions which differ from portions which face the cathode lines.

each respective electron source is divided into a plurality 15 of small electron sources corresponding to the plurality of respective small apertures, and

assuming a distance between top faces of the small electron sources and bottom surfaces of the small apertures as "a" and a distance between inner surfaces of the projecting portions 20 and a side face of the small electron source closest to the inner surfaces of the projecting portions as "b", a relationship $b \geq 2a$ is established.

9. A display device according to claim 8, wherein one ends of the projecting portions are brought into contact with the 25 back substrate.

10. A method of manufacturing a display device which comprises a back panel which includes a plurality of cathode lines, a plurality of electron sources which are arranged on the plurality of respective cathode lines, control electrodes 5 which are arranged to face the cathode lines in an opposed manner and controls an emission quantity of electrons from the electron sources and a back substrate which holds the cathode lines, and a face panel which includes an anode and fluorescent materials; and makes the fluorescent material to emit lights in response 10 to electrons irradiated from the electron sources to perform a display, the method comprising following steps of:

(i) forming the plurality of cathode lines on the back substrate;

15 (ii) forming the plurality of electron sources to each cathode line;

(iii) adhering boron to respective electron sources by way of masks each of which has a plurality of small openings corresponding to each electron source; and

20 (iv) forming portions of each electron source which correspond to the small openings and to which the boron is adhered into small electron sources by heating each electron source.

11. A method of manufacturing a display device according to claim 10, wherein the masks are constituted of the control electrodes.

25 12. A method of manufacturing a display device according

to claim 10, wherein the electron sources are heated at a temperature of equal to or more than 450°C.